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## (54) System and method for labelling an electronic price label tag

(57) A system (18) and method are provided for automatically labelling an electronic price label (EPL) tag (10). A customer data file (CDF) includes a batch of records including a product description and corresponding record number. Labels (14) are printed sequentially for the records contained in the CDF and are automatically applied to the EPL tags (10) in a continuous process. The record number is printed on the tag in the form of a corresponding bar code (16), and the record number bar code (16) and a serial number bar code (12a) also contained on the tag (10) are automatically read. The CDF is updated for correlating the serial number with a respective record number. Optical scanners (38,40) are provided for uncovering defects in visual displays (10a) of the tags (10), misapplied labels (14), and unreadable bar codes (12a,16) which are then rejected. A makeup batch of records is identified from the CDF to identify record numbers without corresponding serial numbers, with the makeup batch then being used to repeat the printing and applying steps for fully processing the batch.

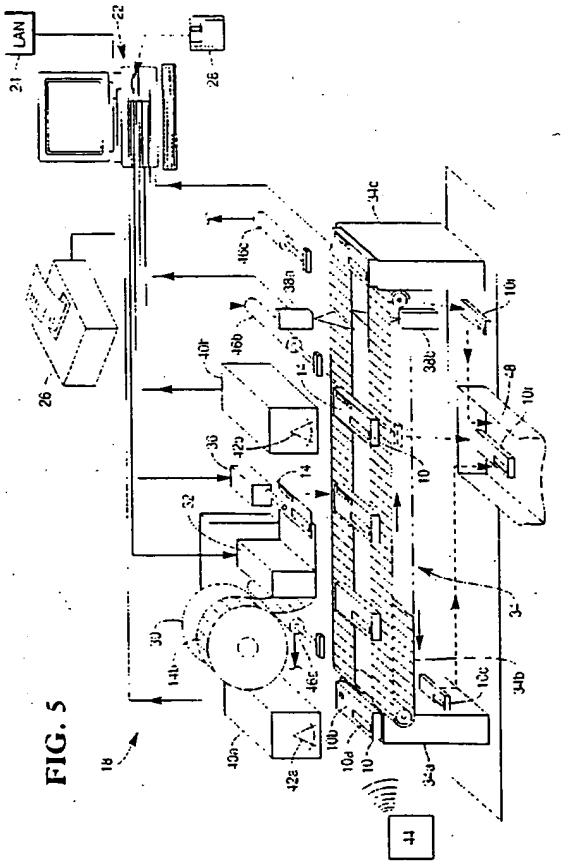


FIG. 5

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## Description

The present invention relates generally to electronic price labels. and. more specifically. to applying face labels thereto.

A merchandising store, such as a grocery supermarket, displays items for sale on shelves, with a price label being provided for identifying the product by description, measure. and price. In order to automate product pricing, electronic price labels have been developed and are in current use at various locations.

In one form. the electronic price label (EL) comprises a thin rectangular tag having face and back sides and suitable, low-power electronics therein. The EPL tag has a suitable visual electronic display such as a conventional liquid crystal display (LCD) which may operate continuously for an extended period of time on suitable battery power. The visual display typically includes multiple digits for displaying the desired retail price and unit price for example. Each digit is typically formed of seven segments conventionally arranged to display the numerals 0 through 9 when selectively energized.

The electronics of each tag are programmed during manufacture for providing a unique serial number (SN) to identify each tag, with each tag also typically including a back label or overlay which typically identifies the manufacture of the tag and includes a visual tag identification including for example the serial number assigned to and contained in the tag electronics. The identification is typically in the form of a conventional bar code such as a Code 3 of 9 bar code. The tag electronics typically also include a radio receiver so that the tag may be remotely reprogrammed for changing the display prices using a conventional radio transmitter within the store specifically designated therefor. In this way. product prices may be easily and quickly changed based on tag serial number.

However, each tag must also be associated with a given product and must include a face label or overlay identifying the specific product associated therewith. with the visual display presenting the corresponding price information to the shopper. Conventional face labels are typically preprinted to identify the specific products as well as including any desired additional information thereon such as the name of the store itself. and the universal product code (UPC) or SKU bar code if desired. The face labels are typically pressure sensitive labels already containing a suitable adhesive so that they may be easily applied and bonded to the face of the tag. As each label is applied to a respective tag, the corresponding tag serial number must be correlated with the product for allowing remote programming of the price thereof. In a typical store having hundreds or thousands of EPL tags. the manual face label application process takes a significant amount of time and is subject to human errors in application of the tags and correlating the serial numbers.

It is an object of the present invention to provide a system and a method for automatically labelling electronic price label (EPL) tags.

According to one aspect of the present invention there is provided a system for automatically labelling EPL tags which each include a visual electronic display and carry a serial number (SN), characterized by a programmable controller for containing a customer data file (CDF) including a batch of records where each record has a plurality of printing fields including a record number (RN): printing means connected to the controller for printing sequentially on labels the printing fields including the RN: transporting means for transporting the tags in sequence: label applying means for applying a printed label to each tag carried by the transporting means: and reading means for reading the SN on each tag and the RN on the label applied to each tag, said reading means being connected to the controller to communicate thereto the SN of the tag and the RN of the label; said controller recording in the CDF the SN of the tag corresponding with the RN of the label.

According to another aspect of the present invention there is provided a method for automatically labelling EPL tags where each tag has a unique SN, characterized by the steps of: providing a CDF including a batch of records where each record has a plurality of printing fields including an RN: printing sequentially on labels the printing fields including the RN; applying a printed label to each tag: reading both the SN on the tag and the RN on the applied label: and recording in the CDF for each record the SN from the tag corresponding with the RN of the label.

One embodiment of the invention will now be described by of example with reference to the accompanying drawings in which:

Fig. 1 is a perspective view of a face side of an exemplary EPL tag having a multi-digit electronic visual display thereon.

Fig. 2 is a perspective view of a back side of the EPL tag illustrated in Fig. 1 and taken generally along line 2-2 and illustrates an exemplary identification back label secured thereto.

Fig. 3 is a perspective view of the front side of the EPL tag illustrated in Fig. 1 having a face label secured thereto. with the face label including an exemplary removable section containing a record number bar code.

Fig. 4 is a perspective view of the EPL tag illustrated in Fig. 3 with the coupon being removed for exposing the visual display.

Fig. 5 is a schematic representation of a system for printing and applying the face labels illustrated in Fig. 3 to the EPL tags in accordance with an exemplary embodiment of the present invention.

Fig. 6 is a flow chart representation of an exemplary method for printing and applying the face labels illustrated in Fig. 3 to the EPL tags.

Referring now to Fig. 1, an exemplary electronic price label (EPL) tag 10 is shown in rectangular form. The tag 10 may have any suitable length, height, and

thickness ranging from small to large sizes as desired. The tag 10 has a visual electronic display 10a in the exemplary form of a liquid crystal display (LCD) on a front face or side 10b thereof. The tag 10 itself is conventional and includes suitable battery powered electronics therein which operate the display 10a. The display 10a has any suitable number of digits, with each digit typically being formed of seven segments arranged for selectively displaying the numerals 0 through 9. In this way, the display 10a may be conventionally programmed to display numbers indicative of retail price and unit price for a specific product for example.

More specifically, the tag 10 is preferably configured for use in an merchandising store to be secured to a shelf containing products, the price of which is identified in the tag 10. The electronics in each tag 10 conventionally include a radio receiver so that the tag may be reprogrammed remotely as desired for changing the price information on the display 10a. The tag 10 also includes a suitable memory device therein which is programmed at manufacture to include a unique serial number (SN) for identifying the specific tag 10. In this way, the tag may be reprogrammed remotely by radio waves based on the identifying SN, so that individual tags 10 may contain different price information for different products associated therewith as desired. In a typical store, there are hundreds or thousands of tags 10, with each tag 10 being capable of displaying different prices which may be conventionally changed as desired based on the unique SN.

Turning now to Fig. 2, a suitable identification label 12 is secured to any suitable location on the tag 10 such as back face or side 10c thereof during the original manufacture of the tag 10. The back label 12 may include any desired information including identification of the manufacturer of the tag 10 and a code identifying the tag 10 itself. The code may be human readable to include any desired information including the specific serial number programmed internally into the tag itself. Preferably, the back label 12 also includes a machine readable serial number in the exemplary form of an identification (ID) bar code 12a which includes at least in part the SN programmed into the tag 10

A typical customer or merchant will require hundreds or thousands of the tags 10 for use in a given store, with each tag 10 being specifically provided for a different product to be sold within the store.

Turning now to Fig. 3, it is desired to affix to the front side of the tag 10 a suitable face label 14 including for example a printed product description, such as a liquid detergent; a unit of measure such as weight or volume; and size which is a specific numerical value of measure units. The face label 14 may include any additional information as desired such as the name of the specific store or merchant, trademarks, or artistic displays if desired. The face label 14 may also include a conventional Universal Product Code (UPC) also known as a SKU number in a conventional UPCE bar code.

However, the specific serial number for the tag 10 must be correlated with the product description contained on the face label 14 to allow remote programming of price in the merchant's store. In accordance with one feature of the present invention, the face label 14 preferably includes a unique record number (RN) printed in a suitable machine readable form such as a Code 3 of 9 RN bar code 16. The RN bar code 16 may be located at any convenient position on the face label 14, or on a separate label specifically therefor if desired. In the preferred embodiment, the face label 14 includes a removable patch or section 14a on which is printed the RN bar code 16. The section 14a is preferably sized to match the perimeter of the visual display 10a as illustrated in Fig. 1 and is bounded by a perforated edge to aid subsequent removal.

Turning now to Fig. 4, tag 10 is shown in its final form with the printed label 14 suitably affixed thereto for attachment to an appropriate shelf location for identifying the product associated therewith in the merchant's store and with the section 14a as illustrated in Fig. 3 having been manually torn away or removed.

Turning now to Fig. 5, an exemplary embodiment of an apparatus or system 18 in accordance with the present invention is schematically illustrated for automatically and continuously printing and applying the face labels 14 to the EPL tags 10 in a batch mode for completing a specific merchant's order therefor.

The process starts by providing a Customer Data File (CDF) to a programmable controller 22 which is preferably in the form of a conventional personal computer (PC). The controller 22 may be connected to a conventional Local Area Network (LAN) 24 and to a conventional system printer 26 for printing various production reports as desired. The controller 22 may have for example an 80486 CPU operating at 66 MHz, with a suitable hard drive memory device therein and conventional software for the LAN 24 and conventional electronic mail as desired. The CDF may therefore be downloaded into the controller 22 by any suitable method via the LAN 24 or E-Mail or from a conventional floppy disk 28 insertable into a corresponding disk reader within the controller 22

The CDF may include various fields of data associated with corresponding products to be sold by a given merchant. Included as part of the CDF are various printing fields to be printed on the face labels 14 including for example a product description such as product name, unit of measure, and size. The printing fields may also include the name of the specific merchant or store or other desired information for being printed on the labels 14. The labels are provided initially as label blanks 14b in continuous roll form on a label roll 30 suitably mounted for unrolling the label blanks 14b. The label blanks 14b may be provided either completely blank of printing or may be conventionally preprinted with common information such as the name of the specific merchant or store and art work as desired which will be re-

peated for all the printed labels 14 for a given merchant. The label blanks 14b are preferably conventional pressure sensitive labels which include an adhesive, with the labels being simply peeled from a liner for being applied and adhesively secured to the tags 10.

As indicated above with respect to Fig. 3, it is desired to print the unique RN in the RN bar code 16 which is used later in the process for correlating the specific face labels 14 to the corresponding serial numbers of the tags 10. Accordingly, the CDF is preferably provided with a corresponding unique RN for each product description for which a tag 10 is to be supplied to the merchant.

The system 18 is preferably operated in batch mode for processing a specific order for a specific merchant. The CDF for the merchant therefore includes an original batch of the product records each having a plurality of printing fields to be printed on the face label blanks 14b. with each record including the product description and corresponding RN. A conventional label printer 32, such as a thermal printer, is connected to the controller 22 for sequentially printing on the blank labels 14b the desired printing fields for corresponding records of the batch. with the RN being printed in the form of the RN bar code 16 on the section 14a portion of the face label 14 as illustrated in Fig. 3. The printer 32 should print at a suitable speed and resolution such as 127 millimetres (5 inches) per second and 8 dots per millimetre (200 dots per inch). and includes a suitable roller feed for transporting the label blanks 14b from the roll 30 through the printer 32 itself. The controller 22 transmits the product records to the printer 32 sequentially wherein they may be temporarily stored in memory queues as desired for ensuring continuous and uninterrupted printing of the labels 14

Suitable means 34 are provided for transporting unlabelled tags 10 in sequence for receiving face labels 14 printed by the printer 32. The transporting means 34 may take any conventional form including an infeed hopper 34a of either top or bottom feeding design which may hold from 250 to about 500 tags 10 as desired. A suitable number of the tags 10 are temporarily stored so that hopper reloading is not too often and may be handled by a single person Disposable magazines are preferred for periodically refilling the infeed hopper 34a during operation.

A conventional conveyor belt system 34b is provided for transporting the individual tags 10 from the infeed hopper 34a for processing of the labels 14 thereon. In the exemplary embodiment. the conveyor system 34b includes two spaced apart conveyor belts across which may be carried the tags 10 so that the back label 12 illustrated in Fig. 2 may be observed from below. with the tag face side 10b facing upwardly. In an alternate embodiment. a single conveyor belt having spaced apart windows therein may be used for providing visual access from below to the back label 12. The conveyor belt or belts may also include suitable alignment ribs within which the tags 10 may be placed for maintaining accurate alignment thereof as they proceed along the conveyor belt.

At the downstream end of the conveyor belt system 34b is a conventional outfeed hopper 34c into which processed tags 10 are delivered and stored. The outfeed hopper preferably includes a suitable magazine or stackable trays for collecting processed tags 10 and allowing manual removal thereof by a single operator.

The printer 32 is disposed above the conveyor belt system 34b. with the tags 10 being transported one-by-one below the printer 32. Means 36 are provided for suitably applying the printed labels 14 dispensed from the printer 32 to respective ones of the tags 10 being carried or transported by the conveyor system 34b. The label applying means or applicator 36 is connected to the controller 22 for coordinated action, and may take any conventional form which removes individual printed labels 14 from the liner and accurately applies the face label 14 to the face 10b of the tag 10. For example, the tag face 10b preferably has a small ridge around its circumference within which the printed face label 14 is secured.

In order to correlate the unique record number of the printed label 14 with the unique serial number of the tag 10 to which a respective face label 14 is applied, suitable means 38a,b are provided for reading or optically scanning both the tag SN and the label RN from the ID bar code 12a on the back label 12 and from the RN bar code 16 on the applied face label 14. In the exemplary embodiment, the reading means include a conventional laser optical bar code scanner 38a disposed above and adjacent to the downstream end of the conveyor belt system 34b for reading from above the RN bar codes 16. A conventional second laser optical bar code scanner 38b is disposed below and adjacent to the downstream end of the conveyor belt system 34b for reading from below the tag ID bar code 12a. The first and second scanners 38a and 38b are suitable connected to the controller 22 to communicate thereto the tag SN and the corresponding label RN simultaneously read from each of the face labelled tags 10.

The controller 22 has suitable software programmed therein which is effective for updating the CDF by recording or writing thereto for the product records the tag SN corresponding with the applied label RN which correlates the applied label 14 to the specific tag 10. The CDF for each product record is therefore updated to match the printed face label 14 with the corresponding SN for the tag so that the merchant may program the required pricing information for viewing from the visual display 10a in the store. In this way, the face labels 14 are automatically printed for specific product descriptions and applied to an identified or correlated tag 10 in a continuous and fast batch processing which completely eliminates correlation errors.

In order to maximize processing speed of the print and apply system 18. the provided CDF is suitably completely read-first by the controller 22 which sequentially

transmits the product description and RN to the printer 32 for continuously printing corresponding face labels 14. The RN therefore identifies the specific product record and face label 14 which is attached to a respective tag 10. Upon completion of the entire batch of product records in the CDF. feedback from the optical scanners 38a.b then allows the controller 22 to update. i.e.. write-to. the CDF to assign or correlate respective serial numbers with the product records using the RN. The updated CDF is then provided to the merchant along with the processed tags 10 so that the merchant can readily identify by serial number the corresponding product description for each of the tags 10 supplied. The record number is therefore no longer necessary, since the merchant will subsequently use the tag serial number itself for programming prices into the respective tags 10 for the identified products associated therewith.

The record number is therefore used to advantage in the system 18 for ensuring correlation of the printed labels 14 with the unique tags 10. The RN may also be used to advantage in the event that any of the label tags 10 is found to be defective for any appropriate reason. which should therefore be rejected and not supplied to the merchant. In this regard, the process preferably further includes the step of rejecting any of the tags 10 for defective displays 10a. for misapplied printed labels 14. and for unreadable bar codes 12a and 16 prior to updating or recording the correlation data in the CDF.

In order to provide quality control of the printing and labelling process. means 40a,b are provided for examining the tags 10 carried by the conveyor belt system 34b for defective displays 10a and misapplied face labels 14. The examining means 40a.b may take any suitable conventional form including a first optical image system or scanner 40a connected to the controller 22 and disposed suitably adjacent to the conveyor belt system 34b and upstream of the label applicator 36 for optically examining the tag visual display 10a. The first image scanner 40a includes a conventional first camera 42a effective for visually inspecting the LCD display 10a to verify that all segments within the display are on. In this regard, a conventional radio transmitter 44 is positioned adjacent to the infeed hopper 34a and is suitably controlled, by a dedicated personal computer for example. to transmit to the tags 10 a suitable test signal for operating the visual display 10a in a test mode wherein all of the segments of each of the digits thereof are turned on. In this way, the first camera 42a is used to optically observe the lighted display 10a of each of the tags 10, with the first image scanner 40a being suitably programmed to recognize defective visual displays 10a. Any tag 10 showing one or more segments which are not on during the test should be ejected as a rejected tag.

Any suitable means may be used for ejecting or rejecting from the conveyor belt system 34b any tag 10 having a defective display 10a. In the exemplary embodiment. a first rejecting means 46a is positioned adjacent to the conveyor belt system 34b upstream of the label applicator 36 and is connected to the controller 22. The first rejector 46a may take any suitable form such as a suitably actuated extension arm which pushes a rejected tag 10r from the conveyor belt into a suitable reject tray or hopper 48 provided specifically therefor. In this way, when the first image scanner 40a recognizes a defective tag 10 this is communicated to the controller 22 which in turn actuates the first rejector 46a to synchronously reject the tag 10r before a face label 14 may be applied thereto. Accordingly, a printed label 14 is not wasted on an initially defective tag 10.

A second conventional optical image system or scanner 40b is similarly connected to the controller 22 and is disposed adjacent to the conveyor belt system 34b downstream of the label applicator 36 for optically examining placement of the printed face label 14 on the tag 10. The second image scanner 40b similarly includes a conventional second camera 42b for imaging the face label 14 applied to the tag 10. The second image scanner 40b includes suitable software for recognizing misapplied labels 14 which are not within the desired perimeter placement on the tag face side 10b to a suitably desired accuracy. The label applicator 36 may from time to time misapply printed face labels 14 to the tags 10 which defective tags should not be provided to the merchant. Accordingly, a conventional second tag rejector 46b, which may be identical to the first tag rejector 46a, is connected to the controller 22 and is disposed downstream of the second camera 42b and upstream of the bar code scanners 38a,b for synchronously rejecting misapplied label tags prior to reading thereof by the bar code scanners 38a.b. The first rejector 46a is effective to reject tags 10 prior to applying the printed face label 14 thereto. The second rejector 46b rejects tags 10 having misapplied face labels 14 prior to bar code scanning thereof. but the unique record number associated with the misapplied face label 14 is therefore also rejected.

Some of the processed tags 10 may reach the bar code scanners 38a.b and have unreadable bar codes and should also be rejected prior to updating of the CDF. In this case. the bar code scanners 38a.b will attempt to read both the ID bar code 12a and the RN bar code 16 on the applied label tags 10. with the unreadability of either bar code causing rejection of the corresponding tag 10r. The bar code scanners 38a.b may be programmed for attempting multiple reads within the short time available as the tags 10 are carried along the conveyor belt system 34b. If a bar code is unreadable. the corresponding tag 10r will be suitably synchronously ejected or rejected by a third rejector 46c. which may be identical to the first and second rejectors 46a.b. The third rejector 46c is connected to the controller 22 and is disposed adjacent to the conveyor belt system 34b downstream of the bar code scanners 38a.b so that failure of the bar code scanners 38a.b to read either one of the bar codes causes the controller 22 to actuate the

third rejector 46c and thereby reject the corresponding tag 10r. In this situation also. the so rejected tag 10r having a label 14 affixed thereto will result in the loss of the corresponding RN therefor.

Any defective display tag 10 rejected prior to the application of a face label 14 thereto may be suitably repaired and recycled as desired. However. once a printed face label 14 is affixed to a respective tag 10. the unique RN for the corresponding product has therefore been used. If an applied label tag is subsequently rejected due to a misapplied label or unreadable bar codes. the unique RNs associated therewith nevertheless remain therewith. Accordingly. during the updating step of the CDF, serial numbers for those rejected tags 10r will not be written into the corresponding record fields. The SN record field will then retain its default or unassigned value indicating the failure of applying a tag SN to a respective product record number.

Accordingly, the controller 22 includes additional conventional software effective for identifying from the CDF. after the batch of records is first sequentially processed to completion through recording and updating of the CDF, all records corresponding with the rejected applied label tags. This is easily done since the CDF updating step correlates the tag serial numbers with corresponding product record numbers in the case where the face labels 14 are properly applied to the tags 10 and both the tag ID bar code 12a and the label RN bar code 16 are readable and transmitted back to the CDF. Any missing tag serial numbers in corresponding ones of the product records is easily identified. The identified records associated with rejected misapplied label tags or unreadable bar code tags are then assembled into a makeup batch of records specifically therefor reusing the corresponding RNs. The makeup record batch is then transmitted to the printer 32 for repeating the printing and subsequent steps until the original or batch is fully processed. The makeup batch may be as simple as a single record for a single rejected tag 10r. but will typically be a relatively small batch compared with the original batch of records processed. The unique product record number used in the system 18 therefor allows for the continuous processing of face labels 14 and tags 10 without interruption for maximizing the speed of production irrespective of rejected tags. Replacement tags for the rejected tags are then processed in the makeup batch as a subsequent operation.

In the preferred embodiment of the invention, the printing fields from the CDF are read-only and transmitted sequentially to the printer 32 for the entire batch prior to updating or recording the serial numbers therein for continuously processing the face labels 14 and tags 10 for maximizing speed. As the RNs and SNs are read by the scanners 38a.b. the data may be temporarily stored in the controller 22 until the entire batch is processed. The CDF is then updated by writing thereto the corresponding SNs for the RNs. The CDF is then searched for any missing SNs to create the makeup batch of records which are then read-only and transmitted from the CDF to the printer 32 for continuously processing the makeup batch. In this mode of operation. maximum speed may be obtained using the same controller 22 for controlling the various operating components of the system 18. If desired. however. a plurality of similarly configured controllers 22 may be provided for controlling different operations of the system 18 in parallel for further maximizing processing speed.

When the updated CDF includes assigned serial numbers for each of the record numbers therein, the original batch has been fully processed, with the resulting tags being readily identified by RN and SN. However, the record number has now fulfilled its usefulness and is no longer needed, and therefore the tag section 14a containing the RN bar code 16 may be manually removed or stripped from the face label 14 to reveal the visual display 10a therebehind. The completed batch of tags 10 is then distributed to the merchant along with the updated CDF for the merchant's use in associating the product descriptions with respective tag serial numbers.

Suitable production and merchant reports may be printed by the system printer 26 to provide any desired information. For example daily production for the system 18 may be printed showing production by specific CDF name. number of tags printed. errors and associated rejected tags. Any or all of the record fields in the CDF may be printed. Furthermore, daily transactions in real time, such as log-on. time and date of starting and completing jobs may also be printed.

Turning now to Fig. 6, a flow chart representation of exemplary method steps for completing the batch processing of the tags 10 and labels 14 is shown.

## Claims

1. A system (18) for automatically labelling electronic price label (EPL) tags (10) which each include a visual electronic display (10a) and carry a serial number (SN). characterized by a programmable controller (22) for containing a customer data file (CDF) including a batch of records where each record has a plurality of printing fields including a record number (RN): printing means (32) connected to the controller (22) for printing sequentially on labels (14) the printing fields including the RN: transporting means (34b) for transporting the tags (10) in sequence: label applying means (36) for applying a printed label (14) to each tag (10) carried by the transporting means (34b): and reading means (38a. 38b) for reading the SN on each tag and the RN on the label (14) applied to each tag (10). said reading means (38a,38b) being connected to the controller (22) to communicate thereto the SN of the tag and the RN of the label: said controller (22) recording in the CDF the SN of the tag corresponding with the

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RN of the label.

2. A system according to claim 1. characterized in that said reading means (38a.38b) comprise: a first optical scanner (38a) adjacent to the transporting means (34b) for reading the RN: and a second optical scanner (38b) adjacent to the transporting means (34b) for reading the SN

3. A system according to claim 1. characterized by: an examining means (40a) for examining the tags (10) for defective displays (10a): a rejecting means (46a) for rejecting tags having defective displays prior to transport to the label applying means (36): an examining means (40b) for examining the tags (10) for misapplied labels (14): a rejecting means (46b) for rejecting tags having misapplied labels prior to transport to the reading means (38): and a rejecting means (46c) for rejecting tags which have an unreadable SN or RN.

4. A system according to claim 3. characterized in that said examining means comprise: a first optical image scanner (40a) for optically examining the visual display (10a) of the tag (10). said first scanner being located adjacent to the transporting means (34b) and upstream of the label applying means (36): and a second optical image scanner (40b) for optically examining placement of the label (14) on the tag, said second scanner being located adjacent to the transporting means and downstream of the label applying means.

5. A system according to claim 1, characterized in that said controller (22) is further effective for: sequentially transmitting from the CDF to the printing means (32) the printing fields for a batch prior to recording in the CDF for continuously processing the labels and tags: identifying from the CDF after the batch of records is first sequentially processed to completion all the records corresponding with the rejected tags: creating a makeup batch of these records: and sequentially transmitting the printing fields of the makeup batch to the printing means for printing and applying labels to replacement tags for the makeup batch.

6. A system according to claim 1. wherein the RN is printed over the visual electronic display (10a). characterized in that. said label (14) has a section (14a) on which is printed the RN and is bounded by a perforated edge which aids the removal of the section (14a) from the label to reveal the visual electronic display (10a) beneath.

7. A method for automatically labelling electronic price label (EPL) tags (10) where each tag has a unique serial number (SN). characterized by the steps of: providing a customer data file (CDF) including a batch of records where each record has a plurality of printing fields including a record number (RN): printing sequentially on labels (14) the printing fields including the RN: applying a printed label (14) to each tag (10): reading both the SN on the tag and the RN on the applied label: and recording in the CDF for each record the SN from the tag corresponding with the RN of the label.

8. A method according to claim 7. characterized by the steps of: identifying from the CDF after the batch of records is first sequentially processed to completion all the records corresponding with the rejected tags: creating a makeup batch of these records: and repeating the cycle of steps for the makeup batch of records as for the initial batch of records until the entire batch is fully processed.

FIG. 1

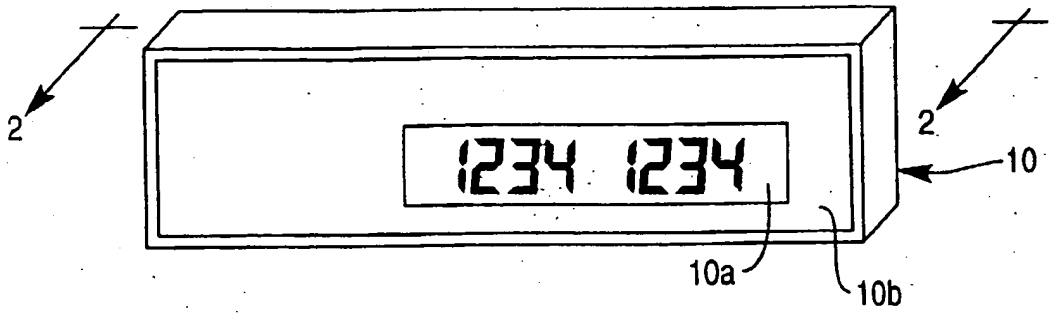



FIG.2

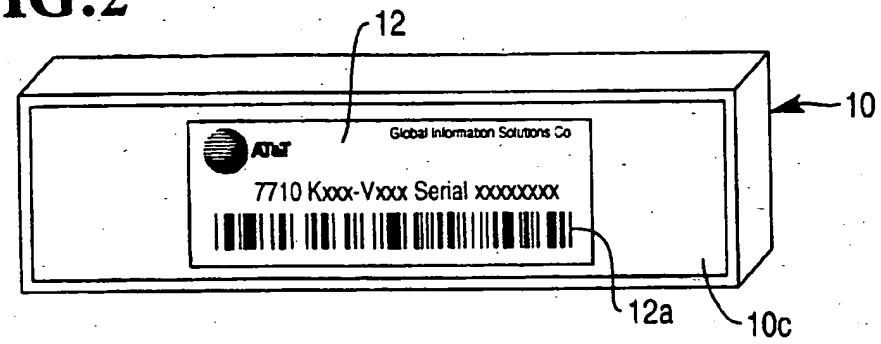



FIG. 3

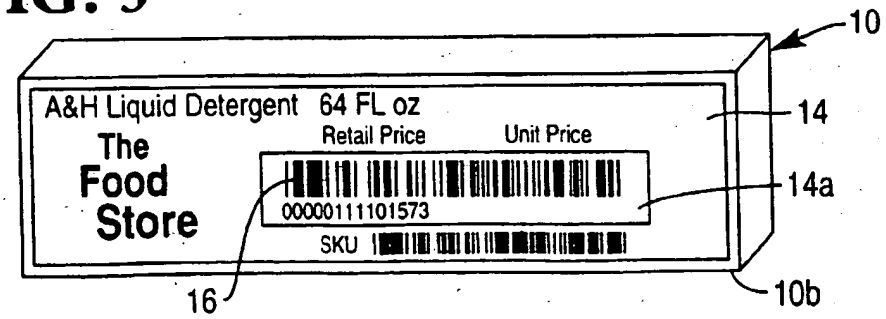
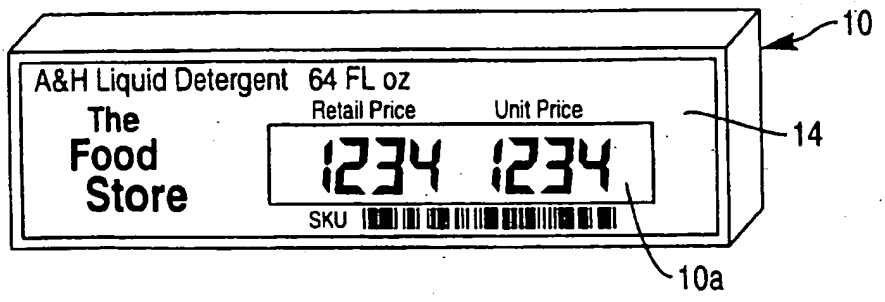



FIG. 4



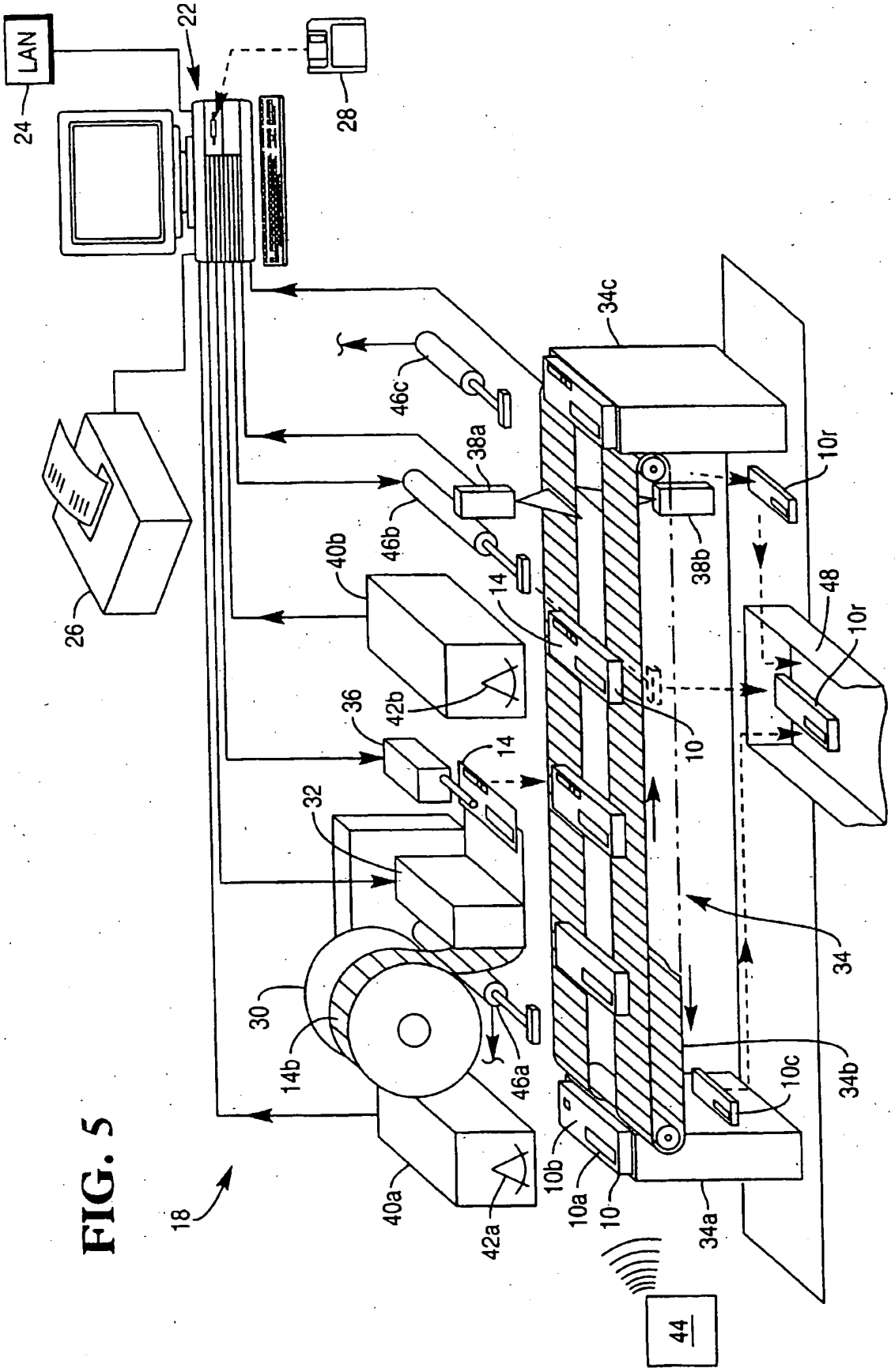
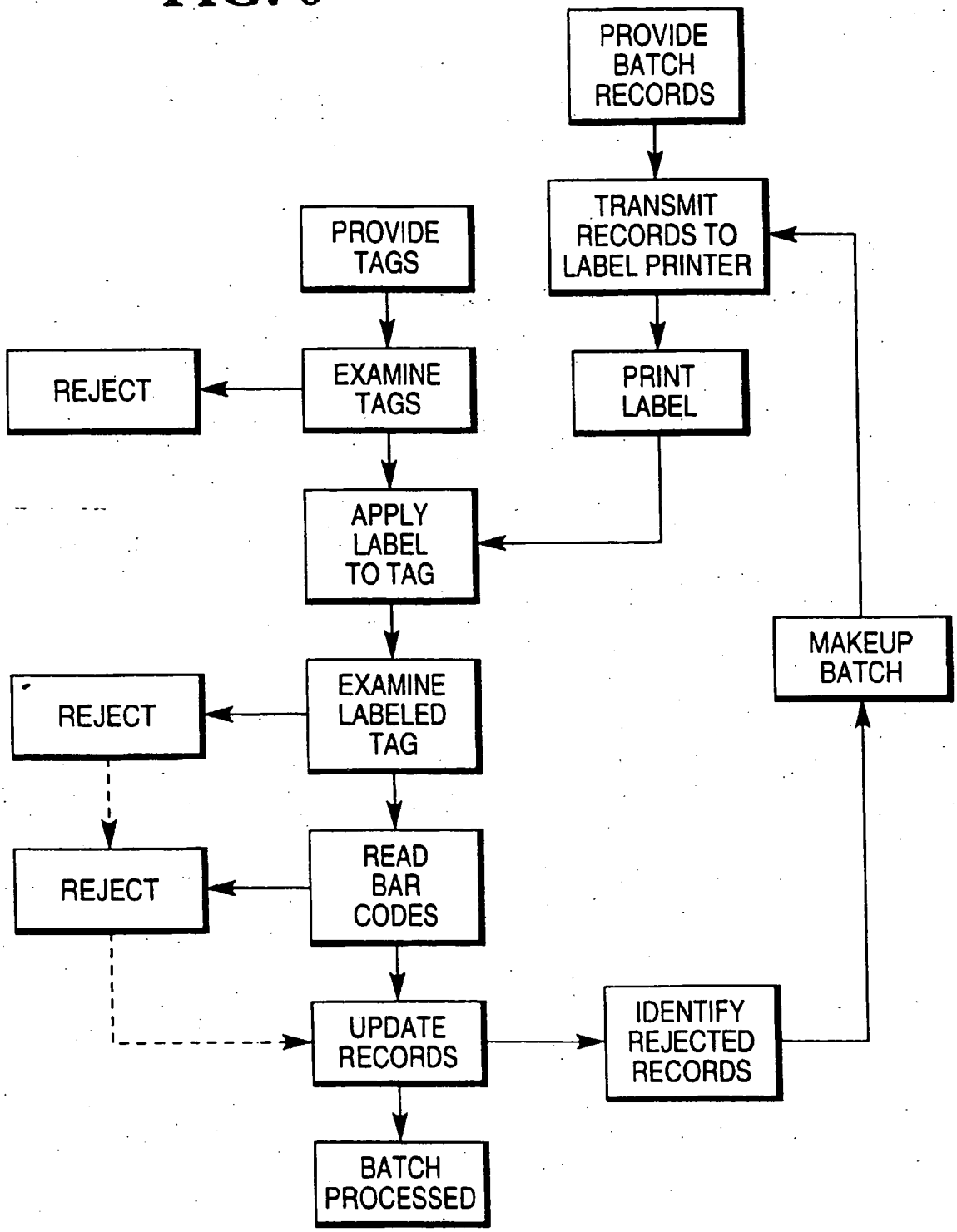

LAN
24
22
28
26
46c
38a
46b
40b
14
36
42b
32
14
30
14b
46a
40a
42a
18
10b
10a
10
44
34a
34c
10r
38b
48
10r
10
34
34b
10c

FIG. 5

FIG. 6


PROVIDE BATCH RECORDS
TRANSMIT RECORDS TO LABEL PRINTER
PROVIDE TAGS
PRINT LABEL
REJECT
EXAMINE TAGS
APPLY LABEL TO TAG
MAKEUP BATCH
REJECT
EXAMINE LABELED TAG
REJECT
READ BAR CODES
UPDATE RECORDS
IDENTIFY REJECTED RECORDS
BATCH PROCESSED

European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 96 30 6420

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int.Cl.6) |
|---|---|---|---|
| A | US 5 172 314 A (T. POLAND ET AL.)<br>* column 4, line 4 - line 10 *<br>* column 4, line 50 - line 68 *<br>* column 6, line 7 - column 7, line 39 *<br>* figures 1,5-10 * | 1,7 | B65C1/02<br>B65C9/46<br>G06F17/60 |
| A | US 5 241 467 A (B. FAILING ET AL.)<br>* column 4, line 33 - line 42 *<br>* column 5, line 21 - line 36 *<br>* figures 3,5 * | 1,7 | |
| A | GB 2 273 589 A (CALDER LIMITED)<br>* page 3, line 8 - line 13 *<br>* page 7, line 20-30 * | 1,7 | |
| A | EP 0 597 470 A (FNAC S.A.)<br>* column 3, line 15 - column 5, line 19 *<br>* figures 1,2 * | 1-4,7 | |

| TECHNICAL FIELDS SEARCHED (Int.Cl.6) |
|---|
| B65C<br>G06F |

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| THE HAGUE | 16 December 1996 | Smolders, R |

CATEGORY OF CITED DOCUMENTS

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